REMARKS

Claims 1-16 are pending in the present application. The Office Action and cited references have been considered. Favorable reconsideration is respectfully requested.

Applicant is submitting herewith a substitute specification. The purpose of this substitute specification is to correct the overprinting that occurred on the right side of the application as filed due to the presence of line numbering. No new matter has been added. Entry of the substitute specification is respectfully requested.

Claims 1 and 11 were objected to due to a number of informalities. These informalities have been corrected in the above amendment. With respect to claims 1 and 13, these claims have been amended to provide proper antecedent basis for the term "a carrier wavelength," and with respect to claim 11, the suggested change has been made. Withdrawal of this objection is respectfully requested.

Claims 3, 4 and 13 were rejected under 35 U.S.C. § 112, second paragraph. Amendments have been made to the claims to overcome this rejection. Withdrawal thereof is respectfully requested.

Claims 1-14 and 16 were rejected under 35 U.S.C. § 103 as being unpatentable over Horiuchi, et al. (U.S. Patent No. 5,406,368) in view of Aoki, et al. (U.S. Patent

Publication No. 2002/0122171). Claim 15 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Horiuchi in view of Aoki and Hoyer (U.S. Patent No. 6,614,513). These rejections are respectfully traversed for the following reasons.

Claim 1 recites a method for measurement of chromatic dispersion in an optical channel of an optical communication line, suitable for transmitting an optical signal at a predetermined optical wavelength being a carrier wavelength of the optical channel, the method comprising steps of introducing controlled changes of wavelength around the predetermined wavelength, and monitoring the optical signal that has passed the line, and obtaining from the optical signal: a first signal dynamically reflecting changes of the carrier wavelength of said optical signal, and a second signal dynamically reflecting changes of delay of the same said optical signal transmitted via the line. The method further includes comparing the first signal with the second signal, and determining the chromatic dispersion sign based on the phase difference between the compared first and second signals. This is not taught, disclosed or made obvious by the prior art of record.

As claimed in amended claim 1, the phase differnce, and claims 8 and 13, the sign, of the chromatic dispersion is determined for a particular optical channel. It means that it

is done on an average basis for an optical fiber as a whole (wideband), but specifically in a narrow bandwidth around the optical channel on a per-channel basis. As claimed, the phase difference or sign is determined based on comparing a first signal and a second signal, wherein both of these two signals are extracted from one and the same optical signal transmitted via the particular optical channel.

Any one of the cited references (the Horiuchi reference, the Aoki reference and the Hoyer reference) needs a number of optical wavelengths (lights, channels) for the measurement, i.e., all cited references:

a) do not perform measurements of dispersion (or sign of dispersion) for one particular optical channel, but rather an average, for a transmission media, such as fiber, and

b) are unable to dynamically determine dispersion or the sign of dispersion by performing suitable measurements using only one particular optical channel.

Turning to what is described by Horiuchi which could be compared with features of claims 1, 8 and 13, Horiuchi proposes comparing propagation time of two optical signals which are respectively transmitted by two light sources 2, 16 at two different wavelengths. Applicant respectfully submits

that this is totally different from the concept of the invention.

The examiner asserts that two signals to be compared are as follows: "a first signal 1 (fig. 1 of Horiuchi) and a second light signal 7 (Fig. 1 of Horiuchi, col. 6, lines 30-35 or abstract)." Sometimes the examiner calls signal 2 (Fig. 1, light source 2) to be the second signal.

However, neither of the two optical signals of different wavelengths issued from sources 2 and 16, nor the pair of signals comprising an oscillator's 1 signal and a signal at photo detector 7 could be considered to be similar to the two signals claimed in claim 1, 8 and 13 of the present patent application. Applicant's first claimed signal reflects changes of the carrier wavelength of an optical signal of a particular channel, and Applicant's second claimed signal reflects dynamic changes of delay of the same optical signal transmitted via that same channel. Both signals according to Applicant's claimed invention are obtained from one and the same optical signal transmitted via one and the same optical channel.

Further, though the examiner considers it to be obvious, Applicant respectfully submits that one of ordinary skill in the art would find it unclear how Horiuchi's first signal 1 (oscillator, Fig. 1) can be modified to reflect the

changes of the wavelength, or how that can make it easier (or needed) to calculate the change in propagation time of each signal.

Applicant respectfully submits that the Horiuchi reference is different from the invention not only by its task, wherein Horiuchi measures dispersion, and the invention resolves the problem of measuring the sign of the dispersion. Horiuchi is also different because Horiuchi compares a "static" phase difference of optical signals at different optical channels, while the present invention deals with signals extracted from one and the same optical channel. Neither Horiuchi nor Aoki disclose that. The invention thereby performs a single dynamic, real time measurement operation for the optical channel, without relying on more than one channel to obtain the required phase measurement.

Any combination of Horiuchi with Aoki would not provide such a single measurement operation, since Aoki (like Horiuchi) uses a number of optical channels (a plurality of light sources emitting lights having different wavelengths), and determines a sign of the dispersion value on the basis of two different propagation times of two lights.

Since neither combination of Horiuchi and Aoki provides the same steps and bring the same results as does the present invention claimed in the amended claims 1, 8 and 13,

Applicants respectfully submit that the claims are patentable over the prior art whether taken alone or in combination as suggested by the examiner.

With respect to claims 2 and 9, Horiuchi does not disclose the second signal reflecting "dynamic" changes of delay of data transmitted over the optical carrier wavelength. The examiner considers that it would be obvious to modify the Horiuchi second signal (though it is not clear from the Office Action whether the examiner considers that the second is from source 2 or from photo detector 7) to reflect "dynamic" changes of delay of data transmitted signal - which is impossible to do.

Looking at this rejection, one is left to wonder which signal of Horiuchi would it be obvious to modify, as the examiner suggests? The examiner calls the Horiuchi second signal to be - once the signal from source 2, and once the signal at the photo detector 7. Which one is to be modified and how? Where can such "dynamic" changes be taken from to modify the second signal of Horiuchi? And finally, which "first signal" would be compared with such modified "second signal?" The signal from oscillator 1 definitely does not reflect changes of the carrier wavelength and thus has nothing in common with the first signal of the present invention.

Since no simple and logical answers can be obtained to the above questions, and the Office Action provides none, the conclusion can be only that, contrary to the examiner's objection, claims 2 and 9 are non-obvious.

Claims 3-5 and 11 additionally comprising the dispersion compensation function, are considered obvious by the examiner. However, it should be noted that neither of the cited references mentions in any way of performing compensation of the chromatic dispersion. Moreover, none of the references suggests the specific algorithm for compensating the dispersion, which is claimed in the above-mentioned claims. The claimed algorithm is based on the preliminary determined sign of the dispersion and comprises applying of dispersion increments up to the change of the dispersion sign. Thus, claims 3-5 and 11 are believed to be patentable in and of themselves and as they depend from and include the recitations of claims 1 and 8, which are patentable for the reasons discussed above.

Claims 6, 7, 10, 12 and 14-16 should be considered non-obvious at least due to the fact that they are dependent on the non-obvious preceding claims.

In view of the above amendments and remarks, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections of record. Applicant submits

that the application is in condition for allowance and early notice to this effect is most earnestly solicited.

If the Examiner has any questions he is invited to contact the undersigned at 202-628-5197.

Respectfully submitted,

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